We Claim:

1. In a digital wireless receiver, a method of detecting the presence of a data packet in a received radio frequency (RF) signal comprising the steps of:

(a) down-converting said RF signal into in-phase (I) and quadrature (Q) baseband signals;

(b) removing direct current (DC) offsets from said I and Q baseband signals;

(c) modulating said I and Q baseband signals;

(d) performing amplitude normalization on said modulated I and Q baseband signals;

(e) comparing said amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

(f) detecting a peak of said complex correlator output; and

(g) if said peak is above a predefined threshold, indicating that a data packet has been received, else performing steps (a) to (g) on a subsequently received RF signal.

2. The method of claim 1 wherein said step of performing amplitude normalization comprises mapping said modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

3. The method of claim 2 wherein said step of detecting further comprises:

(a) converting said complex correlator output from complex to polar value;

(b) calculating the signal magnitude of said polar value; and

(c) determining if a data packet containing information bits is present.

4. The method of claim 3 wherein said step of calculating is performed using the formula (mag)^2.

5. The method of claim 4 wherein the step of determining comprises employing a peak signal envelope detection technique.

6. The method of claim 4 wherein the step of determining comprises comparing the signal magnitude to a minimum threshold and if said signal magnitude exceeds said minimum threshold, indicating that a correct signature was received.

7. In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal comprising:

(a) a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from said received RF signal;

(b) an acquisition module communicating with said DC offset module comprising

i. a M-ary phase shift keying (PSK) mapper for mapping said I and Q baseband signals to a quantized PSK signal constellation;

ii. a complex correlator receiving input from said M-ary PSK mapper for comparing said mapped I and Q baseband signals to a reference; and

iii. a detector receiving input from said complex correlator for determining the presence of a correct signature.

8. The circuit of claim 7 wherein the detector comprises:

i. a complex to polar (C2P) converter for converting the output of said complex correlator into an amplitude and phase value;

ii. a magnitude calculation module for determining a signal size of said converted output; and

iii. a peak detection module communicating with said magnitude calculation module for determining the presence of information bits.

9. The circuit of claim 8 wherein said received RF signal comprises a quadrature amplitude modulated (QAM) signal.

10. In a wireless digital receiver, a method for detecting the presence of a data packet in a received quadrature amplitude modulated (QAM) radio frequency (RF) signal comprising mapping said QAM RF signal to a quantized phase shift keying (PSK) constellation; and processing in a matched complex correlator to detect the presence of a data packet.

11. The method of claim 10 further comprising the steps of:

(a) removing direct current (DC) offsets from I and Q baseband signals derived from said received QAM RF signal;

(b) modulating said I and Q baseband signals;

(c) performing amplitude normalization on said modulated I and Q baseband signals;

(d) comparing said amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

(e) detecting a peak of said complex correlator output; and

(f) if said peak is above a predefined threshold, indicating that a data packet has been received, else performing steps (a) to (f) on a subsequently received QAM RF signal.

12. The method of claim 11 wherein said step of performing amplitude normalization comprises mapping said modulated I and Q baseband signals to a quantized phase shift keying (PSK) signal constellation.

13. The method of claim 12 wherein said step of detecting further comprises:

(a) converting said complex correlator output from complex to polar value;

(b) calculating the signal magnitude of said polar value; and

(c) determining if a data packet containing information bits is present.

14. The method of claim 4 wherein the step of determining comprises comparing the signal magnitude to a minimum threshold and if said signal magnitude exceeds said minimum threshold, indicating that a correct signature was received.

15. In a wireless digital receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal (a) a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from said received RF signal; and (b) an acquisition module receiving said corrected I and Q baseband signals for performing mapping, comparing and detecting functions in relation thereto to determine the presence of information bits associated with said data packet.

16. The circuit of claim 15 wherein said acquisition block comprises:

i. a M-ary phase shift keying (PSK) mapper for mapping said I and Q baseband signals to a quantized PSK signal constellation;

ii. a complex correlator receiving input from said M-ary PSK mapper for comparing said mapped I and Q baseband signals to a reference; and

iii. a detector receiving input from said complex correlator for determining the presence of a correct signature.

17. The circuit of claim 16 wherein the detector comprises:

i. a complex to polar (C2P) converter for converting the output of said complex correlator into an amplitude and phase value;

ii. a magnitude calculation module for determining a signal size of said converted output; and

iii. a peak detection module communicating with said magnitude calculation module for determining the presence of information bits.

18. The circuit of claim 8 wherein said received RF signal comprises a quadrature amplitude modulated (QAM) signal.